



Indianapolis-Marion County Forensic Services Agency *Focus*

Serving the Citizens &
Criminal Justice System
of Marion County

Volume 1, Issue 4
January 15, 2010

So You Want to Work in a Crime Lab?

Many people are interested in a career working in a Forensic Laboratory or Crime Lab these days, mostly fed by the entertainment industry. This lab receives calls on a weekly basis from students and other members of the general public who generally want to know, "How can I work as a Forensic Scientist?" This article is intended to help in answering the question based on experience at the I-MCFSa.

Forensic Laboratories throughout the United States, that are accredited through the American Society of Crime Laboratory Directors/Laboratory Accreditation Board, follow the guidelines established for Forensic Scientist positions. This lab's current educational requirement is a four year degree for Forensic Scientist positions. Most of those positions require a degree in a science, i.e. Chemistry or Biology however, degrees with science courses are sometimes acceptable in certain fields.

Those with a four year degree in Chemistry or Biology seem to fair

the best in the selection process for a position in the Crime Lab. The Forensic Science Education Programs Accreditation Commission (FEPAC) is a commission of the American Academy of Forensic Science (AAFS) whose mission is to maintain and to enhance the quality of Forensic Science education through a formal evaluation and recognition of college-level academic programs. The I-MCFSa experience has been that those students graduating from universities and colleges with a FEPAC accreditation generally have the skills, knowledge and abilities to progress through an internal training program at an accelerated rate when compared to other college students. There are twenty-three colleges and universities that meet FEPAC accreditation, and with IUPUI recently going through FEPAC accreditation an additional resource has been added to the central Indiana area.

While a degree in a natural science based curriculum from a FEPAC accredited institution should serve a person well in obtaining employment at a Forensic Laboratory, the ethics and background of the individual applying for the position are just as

critical. Oftentimes, poor judgment that led to an arrest and conviction may be grounds to disqualify an applicant. Past improprieties may put applicants in a position where the background investigation reveals indiscretions that put them at a competitive disadvantage in the selection process. Those seeking employment in a Crime Lab must remember that everything they do could end up in court where the background of an employee becomes fodder to discredit them when testifying about a forensic analysis - often some of the most powerful evidence in a case.

In conclusion, the information on how to obtain a Crime Lab position is oftentimes best served by calling a Forensic Laboratory and talking with those who do the "real" job. Whether an individual wants to be a Forensic Scientist or a Crime Scene Specialist, they should contact appropriate laboratories for current information.

- Michael Medler,
Laboratory Director

DNA Evidence and Bio-safety

In terms of DNA and biohazards, crime scenes can range from no visible physical evidence to gruesome scenes with large volumes of blood and body tissue. Officers are reminded that universal precautions require that all scenes and items of evidence be treated as though they are contaminated with biohazardous material, i.e. AIDS-tainted blood. Gloves, face masks/shields, safety goggles, shoe covers, disposable coveralls, and other personal protective equipment are essential tools in ensuring officer safety. Some of these tools are also needed to help ensure that evidence is collected in a contamination-free

manner, i.e. using a face mask to protect evidence from sneezing or coughing while swabbing it for potential DNA.

It is not uncommon for scenes to be contaminated with micro droplets of blood which can be easily gathered on an officer's shoes. This potentially hazardous material can then be re-deposited in the officer's vehicle or home. Shoe covers are of great assistance in preventing this from occurring. Shoe covers also protect evidence from being contaminated by substances on an officer's shoes when arriving at the scene.

Safety glasses and masks are invaluable when collecting evidentiary stains. Dried blood or body fluids can flake and become airborne, leaving an officer vulnerable. Additionally, safety glasses and face shields protect evidence from tears or watery eyes during collection.

First responding officers, evidence technicians, detectives and supervisors should be aware of the biohazardous dangers posed, and proper precautions to take when entering a crime scene.

- F/S Ron Blacklock
Deputy Laboratory Director

Inside this issue:

| | |
|--|---|
| Scene of the Crime - Burglaries | 2 |
| Identifying a Non-Firing Rifle: A Case Study | 2 |
| AFIS: An Investigative Tool | 3 |
| Bank Dye Packs | 3 |
| National Ballistics Information Network Interconnectivity | 4 |
| Lab Contacts & Customer Survey Web Address | 4 |

Of Note:

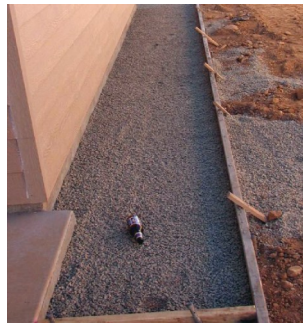
- Over 400 subjects were identified through latent prints developed and DNA collected by lab personnel in 2009
- Sixty NIBIN hits (links between cases on the National Integrated Ballistics Information Network) have been effected by the Firearms Section in 2009
- Over 49,000 items of evidence from more than 13,000 cases were processed and analyzed by the laboratory in 2009



Scene of the Crime - Burglaries

The effective investigation of a burglary can be enhanced by following a few simple steps at the initial scene investigation. By following these guidelines the quality of the biological evidence will be enhanced and maximize the potential for the recovery of possible biological evidence.

The first step is to communicate with the property owner and any first responders. The aim of these conversations should be to identify the possible points of entry and exit, any objects foreign to the scene possibly introduced by the intruder and any objects common to the scene that could have been moved or used by the intruder. The identification of these potentially probative items of evidence provides



Beer bottle from homeowner's refrigerator, left outside

a useful starting point for an evidence collection strategy.

Once the points of entry and exit have been determined then these areas should be examined for any possible biological evidence. It is not unusual for an

intruder to leave blood at the scene and this is valuable evidence.

Foreign objects introduced to the scene or common objects used or moved by the intruder are also a potential source of biological evidence. The most desirable types of evidence have possible body fluid and a used beverage container is a prime example. Evidence that would be in prolonged contact with the intruder's skin (for example a discarded glove) is the next most useful type of evidence. The least useful (i.e. lowest potential of biological evidence recovery) are so called "touch DNA" samples. These include items that would not be expected to have prolonged skin contact with the

intruder or objects at the scene that were moved by the intruder.

Once these items are identified any evidence recovered should be collected and submitted to the laboratory. Generally, if the item is small enough to be collected and packaged this is preferred. Officers may swab larger items, but care must be taken to ensure that contamination with one's own DNA doesn't occur and that proper swabbing techniques are employed.

- F/S David Smith
DNA Analyst
Serology Section Supervisor

Identifying a Non-Firing Rifle: A Case Study

A cartridge case was identified to a partially melted Hi-Point, model 995, 9 mm Luger caliber semiautomatic rifle discovered in the remains of a house fire.

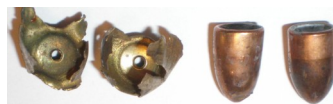
One night in late October of 2007, Indianapolis Metropolitan Police Department (IMPD) officers responded to a house fire and a "persons shot" call. It seems a married couple had both been shot twice during a home invasion and robbery. The suspects then used gasoline to start a fire in the home before fleeing the area.

A partially melted Hi-Point (by Beemiller), model 995, 9 mm Luger caliber semiautomatic rifle, a ruptured magazine, two bullets, two ruptured cartridge cases and



Firearm as Received

one "fired" cartridge case were



Ruptured Cases & Unfired Bullets

discovered in the remains of the fire and submitted as evidence.

The two bullets were examined and found to be 9 mm/38 class caliber with copper-colored full metal jackets and no visible rifling. The two ruptured cartridge cases and the "fired" cartridge case were examined and found to be Fiocchi USA brand 9 mm Luger caliber. It was discovered that the ruptured cartridge cases were missing their primers, but the "fired" cartridge case exhibited parallel breechface marks and a hole through its primer.

It was speculated, by this examiner and other members of the I-MCFS Firearms Section, that the bullets and the ruptured cartridge cases were at one time unfired cartridges loaded into the magazine. It is believed that the heat of the house fire could have caused

the cartridges to explode or "cook off," thereby damaging the magazine in the process. It also seemed apparent that either a cartridge was fired previously or the discovered "fired" cartridge



Cartridge Case Identified to the Firearm

case had been, due to a cartridge being in the chamber of the firearm at the time of the house fire. The heat of the fire could also have caused the chambered cartridge to "cook off."

The Section Supervisor asked that the "fired" cartridge case be entered into the National Integrated Ballistics Information

Network (NIBIN) since the rifle could not be test fired due to damage sustained from the fire. Although the evidence could be entered under a unique case number, it was unknown if the breechface marks visible on the "fired" cartridge case were caused by impact with the breechface of the firearm in question (the Hi-Point rifle).

In an attempt to address the dilemma, what remained of the firearm was disassembled and a piece of lead wire was flattened and lightly hammered into the breechface area of the breech block. On the third attempt, a lead "stamp" was produced that was successfully identified to the "fired" cartridge case submitted with the firearm. The "fired" cartridge case was then entered into NIBIN under the heading of "test shot" should a hit be made to the Hi-Point firearm in the future.

- F/S Michael Cooper
Firearms Examiner



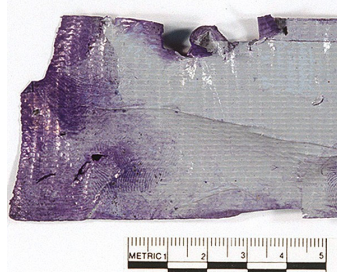
AFIS: An Investigative Tool

The Automated Fingerprint Identification System (AFIS) has been instrumental in helping investigators solve cases in Marion County since 1992. AFIS is also used as a means for identifying unknown deceased persons and potentially obtaining gallery numbers of persons who have given fictitious names upon arrest. IMPD is the host agency, and I-MCFSa has a remote terminal to conduct AFIS searches. Indianapolis was the first site in the United States to incorporate Livescan into AFIS, as well as having the first integrated database system, making the system user friendly, and providing timely results to investigators. AFIS added the capability to search palmprints in 2003, which has also provided critical leads to detectives where none existed.

The database consists of fingerprints and palmprints of all adults and most juveniles who have been arrested in Marion County, as well as those of law enforcement and Crime Lab personnel. Once a print has been entered to search the AFIS database, the results will come back with a list of people and prints that have the most in common with the search print. It takes a qualified, trained examiner to conduct these on-screen comparisons. If a person cannot be excluded as the source of the print, a copy of the fingerprints or palmprints

are obtained. All identifications are verified by another Certified Latent Print Examiner, and the detective is usually given a verbal notification of these results.

Another way AFIS can assist



Latent Prints Developed on Duct Tape from a Pipe Bomb

investigators is through latent prints that have been registered in the unsolved database. Each time a person is fingerprinted, the prints are entered in AFIS to check for a prior history, as well as against the latent prints that have been registered. An IMPD Latent Print Examiner will notify the I-MCFSa Latent Print Unit when there is a possible "hit" on a registered print, and the assigned examiner will conduct any needed comparisons. Some prints with limited quality can still be searched, but may not contain enough information to be registered.

Not all prints contain enough

information to conduct AFIS searches. If suspect and/or victim prints are available, they are compared first. Searches are then conducted on any AFIS quality prints that have not been identified, unless otherwise directed by the investigator. We have the ability to search prints through the Indiana State Police database as well as the FBI, which is known as IAFIS. Not all prints will be searched through all databases as it depends upon the quality of the print, the crime type, and if demographics can be provided on the suspect. The FBI has strict thresholds, and they require more information than Marion County or Indiana does in order to conduct a search, due to the immense size of their various databases. This is where communication between investigators and the Latent Print Examiners is so important. If you believe the suspect does not live locally, and have received regional information regarding where a suspect might be from, contact an examiner or note it on the lab request. This can make a difference in our ability to make use of the FBI's database, and ultimately, identify a potential suspect.

While AFIS has revolutionized the field of friction ridge identification and has become a powerful tool to fight crime, it is dependent on the quality of the

database itself, and the latent prints submitted. If you receive a report that states that AFIS searches were conducted but no identifications were produced, it does not mean that the source of the print is not in the database. Many factors can influence the quality of the database, such as improperly taken prints, temporary injuries, and diseases or conditions of the hands and palms upon printing them. Fairly often we are notified of a possible registered print identification to an existing gallery number, usually because the newer print quality was better than the original database prints.

In an effort to stay one step ahead of the criminals, AFIS technology is evolving at a rapid pace and in the foreseeable future will allow us to search previously unsearchable prints. There are many AFIS system vendors, but as it stands now, the systems can't "talk" to each other, so searches are vendor limited as well as the agencies that are interconnected to them. Progress is being made towards changing this, which will allow access to more databases and hopefully, the identification of more prints that are searched through AFIS.

- *FIS Diane Donnelly*
Latent Print Examiner

Bank Dye Packs

A bank security dye pack resembles a real stack of bills that contains an electronic device disguised within a hollowed portion



Dye Pack

of the stack. The pack remotely activates to discharge soon after a robber exits the bank with the

device. When activated, the device emits a steady aerosol stream that contains a red dye and may also emit tear gas. The purpose of the device is for the dye to stain the suspect, money, and other items in close proximity, and the tear gas is used to encourage abandonment of the money, thus making it easier to recover.

Analysis of evidence related to bank robbery incidents involves the identification of chemical residues associated with a dye pack, in particular, the red dye

(MAAQ) and CS tear gas. The



Activated Dye Pack

standard operating procedure performed at the I-MCFSa involves a multistep plan that incorporates several different techniques to identify MAAQ and CS

tear gas. The chemical residues first must be visualized by examining the item for red and/or pink stains or, in the case of dark items, swabbing an item with a clean swab moistened with a solvent such as methanol or acetone. Once the colored stain is isolated, it is extracted with an appropriate chemical solvent and compared against a standard dye from dye packs used by that bank.

- *I. Forensic Science*
Communications, Jan. 2008



**Indianapolis-Marion County
Forensic Services Agency**
40 S. Alabama St.
Indianapolis, IN 46204

**Phone: 317-327-3670
Fax: 317-327-3607**

<http://www.indy.gov/eGov/County/FSA/Pages/home.aspx>

Customer Survey Link:
<http://spspp01/sites/Crimelab/Lists/Customer%20Survey/overview.aspx>

**Serving the Citizens &
Criminal Justice System
of Marion County**

Laboratory Management Team:

Michael Medler, Laboratory Director
Ronald Blacklock, Deputy Laboratory Director
Brenda Keller, Quality Assurance Manager
Muhammad Amjad, DNA Tech. Leader/Supervisor
Lee Ann Harmless, FDE/Latent Prints Supervisor
Robert McCurdy, Chemistry Unit Supervisor
Michael Putzek, Firearms Section Supervisor
Michael Smilko, Crime Scene Spec. Supervisor
David Smith, Serology Section Supervisor
Amanda Sondgeroth, Forensic Evidence Tech. Sup.
Larry Schultz, Forensic Operations Manager
Jeni Nolte, Forensic Administrator
Newsletter edited by Ronald Blacklock

I-MCFSA Latent Print/Forensic Documents Section



The Indianapolis-Marion County Forensic Services Agency shall provide forensic services to the Marion County Community by supporting the needs of the Criminal Justice System. The forensic services provided shall be built on a foundation of quality, integrity, accountability and ethics. All I-MCFSA personnel shall strive to meet forensic needs of today and into the future in all their work endeavors.

Forensic Services Board

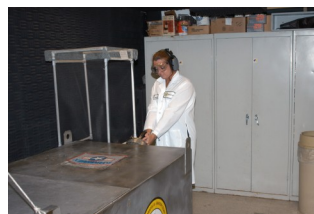
Michael Spears, Chairman, Chief - Indianapolis Metropolitan Police Department
Frank Anderson, Marion County Sheriff
Dr. Frank Lloyd, Marion County Coroner
Billie Breaux, Marion County Auditor
Joseph Bono, Mayoral Appointee; President, American Academy of Forensic Sciences, IUPUI Forensic & Investigative Sciences Program
Dr. Sam Nunn, City-County Council Appointee, IUPUI School of Public & Environmental Affairs

National Ballistics Information Network Interconnectivity

An April, 2009, Focus article discussed how the National Integrated Ballistics Information Network (NIBIN) is used at the Indianapolis Marion County Forensic Services Agency to digitally image breechface impressions on fired cartridge cases. These images are stored within the database and can be digitally compared (correlated), not only to those cartridge cases which are entered at our laboratory, but also correlated to cartridge cases entered by other agencies which subscribe to and use the NIBIN system.

Once a cartridge case has been entered into the NIBIN system through the entry station at the I-MCFSA, an automatic correlation is performed. An automatic correlation, as the name implies, is not initiated by the user and occurs for each cartridge case entered. The information and images acquired during the acquisition process are electroni-

cally sent to a correlation server located at the ATF Laboratory in Ammdendale, Maryland. The correlation server is specific to a



Firing a Weapon for NIBIN Entry

geographic region. The I-MCFSA region includes the Indiana State Police Laboratories, South Bend Police Department, West Lafayette Police Department and Lake County Laboratory. The information and images sent from the I-MCFSA are correlated against these departments as well as previous and current IMCFSA entries. The results are then sent back to our entry station and reviewed by an examiner.

A manual correlation allows the NIBIN user to choose the regions or sites that are not within the automatic correlation region. If intelligence exists which indicates that a firearm may have been used in crimes located within other regions, a manual correlation may be performed. There are approximately 228 NIBIN sites across the country. Therefore, it is vital that specifics about the geographic region of interest be forwarded to justify a manual correlation request on a specific firearm or cartridge case. Due to the number of sites and volume of cartridge cases within the NIBIN system, it would be impractical to conduct a manual correlation on every cartridge case and firearm submitted.

If a firearm or cartridge case is recovered and you need a manual correlation in NIBIN completed, please submit a request card stating the geographic region you believe the firearm or

cartridge case could be linked. If NIBIN establishes a link, please keep in mind that an examiner must confirm this link (also known as a "hit") by examining the original test fires or evidence cartridge case that was entered. This may take additional time as the evidence will have to be



Making NIBIN Entries

received from another agency outside of our region.

- F/S Doug Boxler
Firearms Examiner